

Resources

The resources below were selected in order to provide you with information on a wide variety of strategies and topics directly related to Instructional Practices.

These resources are offered to you as suggestions only and are meant to complement what you are already doing in your classroom. They come from several sources and are not necessarily affiliated with Alberta Education.

About developing a classroom culture

1. The Effective Math Classroom

This 7-page document describes what the effective math classroom looks, feels and sounds like. It is an easy and very informative read.

[The Effective Mathematics Classroom](#), prepared by St-Andrews University, MI

2. The Thinking Math Classroom

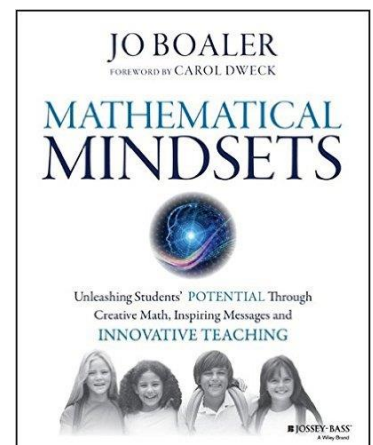
This 27-page document, [Building Thinking Classroom](#), focuses on research by Canadian Dr. Peter Liljedahl, Simon Fraser University. He explains his research and what it takes to develop a thinking math classroom.

[This video](#) shows a classroom where students develop a growth mindset through perseverance, mistake making, discussions and articulating their thinking process.

3. Mathematical Mindsets

“Mathematical Mindsets provides practical strategies and activities to help teachers and parents show all children, even those who are convinced that they are bad at math, that they can enjoy and succeed in math. Jo Boaler—Stanford researcher, professor of math education, and expert on math learning—has studied why students don't like math and often fail in math classes. She's followed thousands of students through middle and high schools to study how they learn and to find the most effective ways to unleash the math potential in all students.” (Amazon.ca)

Boaler, J., & Dweck, C. (2016). [Mathematical Mindsets: Unleashing Students' Potential through Creative Math](#). John Wiley & Sons.



4. Growth Mindsets

[This website](#) hosts 7 short videos featuring Dr. Jo Boaler talking about the importance of a growth mindset when learning Mathematics.

5. Normalizing Error

[This website](#) hosts several videos where Dr. Jo Boaler and Dr. Carol Dweck talk about celebrating mistakes.

6. Perseverance in the Math Classroom

[This video](#) shows how one teacher encourages students to persevere through challenges.

7. Increase Students' Motivation, Grades & Achievement Test Scores

[This website](#) presents information on the research focusing on growth mindset.

8. How to Teach Math as a Social Activity

[This video](#) focuses on a Grade 5 classroom that has developed a cooperative-learning environment within the math classroom.

About the 7 Mathematical Processes

1. Manipulatives in the Primary Classroom (Visualization)

Manipulatives are important in making mathematics visible. However they are not always used efficiently. This [article](#) offers suggestions as to how to help students think, reason, and problem solve with the help of manipulatives.

2. Practical Ways to Develop Student's Mathematical Reasoning (Reasoning)

This [website](#) offers a short reading and 2 videos about mathematical problem solving abilities. The teacher works hard to [normalize struggle](#) and has students represent a problem in three different ways.

3. Using Creativity to Boost Young Children's Mathematical Thinking (Connection, Communication)

This [web-based article](#) proposes ways to support creative mathematical thinking

4. Discourse (Communication)

The [article](#) *Promoting Mathematical Argumentation* provides strategies for implementing Discourse into mathematics lessons.

5. Encouraging students to persist through challenges - A growth mindset practice (Reasoning, Communication)

This [video](#) of Grade 2 students demonstrates many different ways to make students reason, communicate, reflect, share and justify their strategy in mathematics.

About Instructional Strategies

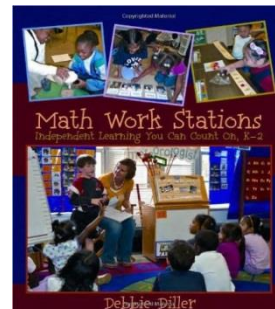
1. Paying Attention to Mathematics Education

This [website](#) offers the reader many articles on mathematics teaching. Be prepared to be amazed.

2. Math Work Stations

This book offers the reader strategies to establish Math Centres in his class.

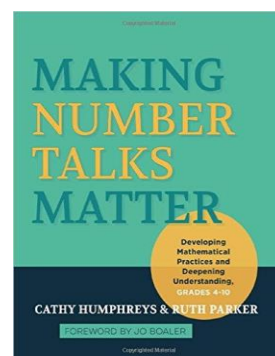
Diller, D. (2011). [Math work stations: Independent learning you can count on](#), K-2. Portland, Me.: Stenhouse.



3. Making Number Talks Matter

This book explains the value and the strategies a teacher can use to help students develop fluency and flexibility with numbers.

Humphreys, C., & Parker, R. E. (2015). [Making number talks matter: Developing mathematical practices and deepening understanding, grades 4-10](#).

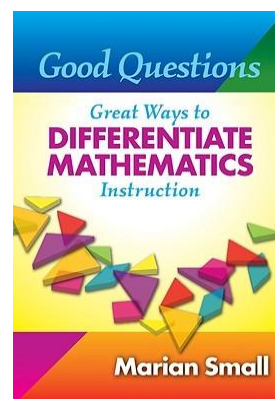


4. Good Questions - Great ways to differentiate mathematics instruction

This book suggests 2 powerful ways to question differently in order to differentiate. Many examples are offered for each grade from K to 8.

Small, M. (2009). [Good questions: Great ways to differentiate mathematics instruction](#). New York: Teachers College Press.

For more info, see the Good Question of the week at <http://www.onetwoinfinity.ca/good-question/#>



About Instructional Practices

1. Effective Mathematics Learning and Teaching

This [document](#) is a draft infographic created by the Ontario Education Minitor and shows how Effective Mathematics Learning and Teaching can be defined.

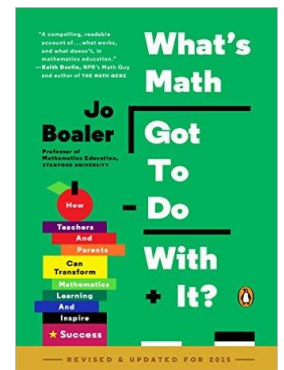
2. Personalization vs Differentiation vs Individualization

In 2010, the National Ed Tech Plan defined Personalization, Differentiation, and Individualization as they are related to instruction. Personalization is learner-centered. The other two, are teacher-centered. Read more about it in [this one-pager](#).

3. What's Math got to do with it?

[This book](#) is an excellent read on teaching Mathematics

Boaler, J. (2015). [What's math got to do with it?: How teachers and parents can transform mathematics learning and inspire success](#). Penguin Books.



4. Teaching Elementary Students the Magic of Math

This [video](#) talks about looking at math throughout all subjects, solving questions in multiple ways, and the importance of students sharing their thinking. It also includes a great estimation activity about the length of the Titanic.